TOUCH PANEL

BACKGROUND OF THE INVENTION

This Application claims priority of China Patent Application No. CN 201310468936.2, filed on Oct. 9, 2013, and the entirety of which is incorporated by reference herein.

Field of the Invention

The present invention relates to the field of touch input technologies and more particularly to a touch panel.

Description of the Prior Art

Nowadays, personal digital assistants (PDA), mobile phones, notebook computers, tablet PCs and other portable electronic products are commonly used in modern life. Since these electronic products need to be thinner and lighter, the traditional input devices, such as keyboards or mice have to be replaced with other input devices. In addition, the needs for tablet PCs has greatly increased, hence the touch panel technology has became one of the key components in electronic products. Besides, the organic light emitting display (OLED) has some advantages such as thinning, low weight, low power consumption, high brightness, high response speed, so it also commonly used in mobile electronic devices.

In the technology of combining the touch panel and the OLED, usually, the touch panel and the OLED are formed separately in individual processes, and then combined with each other. The OLED provides the function for displaying, and the touch panel provides the function for interacting with the user. The position data detected by the touch panel and displaying data of the OLED are connected to each other and then calculated through the outside traces and the operation systems, therefore the touch panel becomes heavy and thick, and is hardly able to achieve the lightened and thinned requirements. Besides, PET (polyethylene terephthalate) is usually used as the substrate of a large-size touch panel, but some common materials for forming the electrodes such as indium tin oxide (ITO) are fragile and not suitable for forming on the flexible PET film. In addition, some issues such as PET substrate can't endure high temperatures, or the conductivity of the ITO electrode can't satisfy the rapid scanning requirements of the large-size touch panel still need to be resolved.

SUMMARY OF THE INVENTION

The present invention provides a touch panel, comprising a lower substrate, an organic light-emitting component, disposed on the lower substrate, a nano silver sensing layer, disposed on the organic light emitting component, and an upper substrate, disposed on the nano silver sensing layer.

In one embodiment of the present invention, the nano silver sensing layer comprises: a first insulating layer, disposed on the organic light emitting component, a first nano silver electrode layer, disposed on the surface of the first insulating layer, a second insulating layer, disposed on the first nano silver electrode layer, and a second nano silver electrode layer, disposed on the surface of the second insulating layer.

In one embodiment of the present invention, the first insulating layer and the second insulating layer are composed of flexible materials, and the flexible materials are selected from a group consisting of epoxy, modified epoxy, polyester, acrylic, fluorocarbon polymers, polyphenylene oxide, polyimide, phenolic resins, polysulfones, silicone-polymer resin, BT resin, cyanate poly polyethylene, polycarbonate resin, acrylonitrile-butadiene-styrene copolymer, polyethylene terephthalate, polyethylene terephthalate, polybutylene terephthalate, liquid crystal polymers, polyamides, nylon 6, copolymerized formaldehyde, polyphenylene sulfide and cyclic olefin copolymer.

In one embodiment of the present invention, the touch panel further comprises a transparent adhesion layer disposed between the organic light emitting component and the first insulating layer.

In one embodiment of the present invention, the first nano silver electrode layer includes a plurality of first electrodes, the second nano silver electrode layer includes a plurality of second electrodes, the first electrodes and the second electrodes are crossed to each other.

In one embodiment of the present invention, the touch panel further comprises a plurality of protection layers disposed on the first nano silver electrode layer and the second nano silver electrode layer respectively, wherein each protection layer includes a plurality of via holes to expose parts of each first electrode and parts of each second electrode.

In one embodiment of the present invention, the touch panel further comprises a plurality of traces, each trace electrically connected to one first electrode or one second electrode through the via holes.

In one embodiment of the present invention, the nano silver sensing layer comprises: a third insulating layer, disposed on the organic light emitting component, wherein the third insulating layer has a lower surface closer to the organic light emitting component, and the third insulating layer has an upper surface relatively far away from the organic light emitting component, a first nano silver electrode layer, disposed on the lower surface of the third insulating layer, and a second nano silver electrode layer, disposed on the upper surface of the third insulating layer.

In one embodiment of the present invention, the third insulating layer is composed of flexible materials, and the flexible materials are selected from a group consisting of epoxy, modified epoxy, polyester, acrylic, fluorocarbon polymers, polyphenylene oxide, polyimide, phenolic resins, polysulfones, silicone-polymer resin, BT resin, cyanate poly polyethylene, polycarbonate resin, acrylonitrile-butadiene-styrene copolymer, polyethylene terephthalate, polyethylene terephthalate, polybutylene terephthalate, liquid crystal polymers, polyamides, nylon 6, copolymerized formaldehyde, polyphenylene sulfide and cyclic olefin copolymer.

In one embodiment of the present invention, the organic light emitting component is an organic light-emitting display device.

The present invention combines the nano silver sensing layer and the organic light emitting component into a touch panel, lightened and thinned the large-size touch panel, on the other hand, the nano silver sensing layer has great conductivity, to achieve the demands for rapid scanning in a large-size product.

These and other objectives of the present invention will no doubt become obvious to those of ordinary skill in the art after reading the following detailed description of the preferred embodiment that is illustrated in the various figures and drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a schematic diagram showing the touch panel according to the first preferred embodiment of the present invention.

FIG. **2** is a schematic diagram showing the nano silver sensing layer of FIG. **1**.